

IN THE CLAIMS

Please amend the claims as follows:

Claim 1 (currently amended): An outer tube comprising:
a body made of silicon carbide, configured to be used in a thermal treatment system
and having an upper portion, a lower portion and a flange, wherein the upper portion is
closed, the lower portion is open and is formed with a tapered portion expanding toward a
lower end of the body, the flange is formed on an outer peripheral side of the tapered portion
of the lower portion, and the following conditions are met:

- 1) a ratio of t_a/D_1 is from 0.0067 to 0.025,
- 2) a product of $t_a \times D_1$ is from 600 to 4,000 (mm^2),
- 3) $(D_{F2}-D_{F1}) \times t_c / (D_1 \times t_a)$ is from 0.1 to 0.7, and
- 4) L_1/L_2 is from 1 to 10;

where the lower portion has a thickness of t_a (mm) and an inner diameter of D_1 (mm),
the flange has a thickness of t_c (mm), an inner diameter of D_{F1} (mm) and an outer diameter of
 D_{F2} (mm), and the tapered portion tapers such that the lower portion is expanded from the
inner diameter D_1 to the inner diameter D_{F1} over a height L_1 (mm) and an expanse of L_2
(mm).

Claim 2 (original): The outer tube according to Claim 1, wherein the tapered portion
has upper and lower edges of an inner peripheral side rounded with a radius of 2 mm (R2) or
above.

Claim 3 (original): The outer tube according to Claim 1, wherein the tapered portion
has an inner surface having a surface roughness R_a of not greater than 7 μm .

Claim 4 (currently amended): A thermal treatment system comprising:
an outer tube made of silicon carbide, wherein the outer tube has an upper portion, a
lower portion and a flange, the upper portion is closed, the lower portion is open and is

formed with a tapered portion expanding toward a lower end of the outer tube, the flange is formed on an outer peripheral side of the tapered portion of the lower portion, the following conditions are met:

- 1) a ratio of t_a/D_1 is from 0.0067 to 0.025,
- 2) a product of $t_a \times D_1$ is from 600 to 4,000 (mm^2),
- 3) $(D_{F2} - D_{F1}) \times t_c / (D_1 \times t_a)$ is from 0.1 to 0.7, and
- 4) L_1/L_2 is from 1 to 10;

where the lower portion has a thickness of t_a (mm) and an inner diameter of D_1 (mm), the flange has a thickness of t_c (mm), an inner diameter of D_{F1} (mm) and an outer diameter of D_{F2} (mm), and the tapered portion tapers such that the lower portion is expanded from the inner diameter D_1 to the inner diameter D_{F1} over a height L_1 (mm) and an expanse of L_2 (mm).

Claim 5 (original): The thermal treatment system according to Claim 4, wherein the tapered portion has upper and lower edges of an inner peripheral side rounded with a radius of 2 mm (R2) or above.

Claim 6 (original): The thermal treatment system according to Claim 4, wherein the tapered portion has an inner peripheral side having a surface roughness R_a of not greater than 7 μm .

Claim 7 (original): The thermal treatment system according to Claim 4, wherein the height L_1 of the tapered portion satisfies the relationship of $H/4 < L_1 < 3 \cdot H/4$, where a distance between a lowest end of a heater and a bottom surface of the outer tube is H (mm).

Claim 8 (currently amended): An outer tube for a thermal treatment system, comprising:

a body made of silicon carbide, configured to surround an inner tube of a thermal treatment system and having an upper portion, a lower portion and a flange, wherein the

upper portion is closed, the lower portion is open and is formed with a tapered portion expanding toward a lower end of the body, the flange is formed on an outer peripheral side of the tapered portion of the lower portion, a ratio of t_a/D_1 is from 0.0067 to 0.025, a product of $t_a \times D_1$ is from 600 to 4,000 (mm^2), $(D_{F2}-D_{F1}) \times t_c / (D_1 \times t_a)$ is from 0.1 to 0.7, and L_1/L_2 is from 1 to 10, where the lower portion has a thickness of t_a (mm) and an inner diameter of D_1 (mm), the flange has a thickness of t_c (mm), an inner diameter of D_{F1} (mm) and an outer diameter of D_{F2} (mm), and the tapered portion tapers such that the lower portion is expanded from the inner diameter D_1 to the inner diameter D_{F1} over a height L_1 (mm) and an expanse of L_2 (mm).

Claim 9 (new): The outer tube according to Claim 1, wherein the L_1/L_2 is from 2 to 8.

Claim 10 (new): The outer tube according to Claim 1, wherein the L_1/L_2 is from 3 to 5.

Claim 11 (new): The thermal treatment system according to Claim 4, wherein the L_1/L_2 is from 2 to 8.

Claim 12 (new): The thermal treatment system according to Claim 4, wherein the L_1/L_2 is from 3 to 5.

Claim 13 (new): The outer tube according to Claim 8, wherein the L_1/L_2 is from 2 to 8.

Claim 14 (new): The outer tube according to Claim 8, wherein the L_1/L_2 is from 3 to 5.